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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,306	05/24/2000	Bastiaan Hendrik Bakker	F3238(C)	4727

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UNILEVER
PATENT DEPARTMENT
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EDGEWATER, NJ 07020

EXAMINER

SORKIN, DAVID L

ART UNIT	PAPER NUMBER
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1723

15

DATE MAILED: 01/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/577,306

Applicant(s)

BAKKER ET AL.

Examiner

David L. Sorkin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 15-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-19 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. It is noted that the copy of reference WO 97/26800 cited in the IDS filed 08 January 2001 does not include a specification. In general, the references cited in the IDS have only been considered to the extent that they have been provided to the examiner. The examiner's initial's on the IDS form indicate a reference provided by applicant and corresponding to a given citation has been considered to the extent provided; however, the initials should not be interpreted as indicating that the entire document has been considered, if only a portion of the document has been provided by the applicant. The instant specification suggests that an additional portion of WO 97/26800 is available to applicant.

Drawings

2. The drawings filed 04 January 2002 are objected as failing to comply with 37 C.F.R. 1.84(u)(1), which states "Where only a single view is used in an application to illustrate the claimed invention, it must not be numbered and the abbreviation 'FIG.' must not appear". A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: In accordance with the drawing objection above, all references to "figure 1" must be

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deleted from the specification. The phrase "the drawing", for example, would be appropriate.

4. To fully comply with 37 C.F.R 1.74, the specification should have a brief description of the drawing, before the Detailed Description of the Invention section.

Claim Objections

5. Claim 17 is objected to because of the following informalities: "barrell" should read - - barrel - -. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-12 and 15-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 2 and 9 are rendered indefinite by the word "preferably", because it is unclear if the limitations following the word "preferably" are required elements of the claimed extruder. In the response filed 04 January 2002 (paper No. 13) applicant states "The word 'preferably' has also been removed from all the claims". However, this is not the case.

9. Though improved by the most recent amendment, the scope of the claims remains unclear due to the screw parameter definitions together with the recitation of the screw parameter values in the claims. The claims should set forth an apparatus to the degree that the recited definitions necessarily apply. For example, the specification

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recites a definition of pitch angle in terms of a pitch length and a screw diameter. It would appear; therefore, that the definitions would only apply to screws with constant screw diameters and constant pitch length and having the same pitch for each flight of the screw; however, the claims do not explicitly state this. Also, it would appear from the use of the term "H/wc" in the claims and the definitions of H and wc, as well as the specification and drawing, that the screw is required to have constant H and wc values. However, someone could argue that the claims are open to a screw which has a variable H and/or a variable wc.

Claim Rejections - 35 USC § 102 and 103

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 1-6, 8-11 and 15-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hunchar et al. (US

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5,713,209). Hunchar ('209) discloses an extruder comprising an extruding screw (14) and a barrel (18); said extruding screw being characterized by five (which anticipates the claimed range 2-6) thread starts. An additional limitation "characterized by ... a pitch angle of between 32 and 42 degrees is recited". Hunchar ('209) describes the pitch of the screw in terms of ratio of pitch length to diameter rather than angle (see col. 7, lines 28-34 and col. 14, lines 1-11). It is stated that screw flights have "a pitch in the order of 1.6 times the diameters and in the preferred form in the range 0.4 to 2.4 times the diameters, particularly in the range 1.2 to 2 times the diameters, and in the most preferred form in the order of 1.5 to 1.7 times the diameters". It is evident from the col. 16 that "diameter" means diameter to the crest of the flight, as opposed to the rotor of the flight. Using applicant's definition of pitch angle defined on line 33 of page 3 of the instant specification and converting the slightly different definitions of "diameter" of applicant vs. Hunchar ('209) using the most highly preferred ratio of the two diameters of 1.04 disclosed in Hunchar ('209) col. 9 lines 27-38, the following conversion of the above quoted statement is obtained (angles round to 0.1 degrees): "a pitch in the order of [27.9 degrees] and in the preferred form in the range [7.5 to 38.5 degrees], particularly in the range [21.7 to 33.5 degrees], and in the most preferred form in the order of [26.4 to 29.4 degrees]". Therefore, claim 1 is rejected, in the alternative as being anticipated by and obvious over the reference as explained in MPEP2131.03. Regarding claim 2, cooling means (including 36) are disclosed. Regarding claim 3, it is considered that cooling liquid is a material intended for use with the apparatus, rather than a structural element of the claimed apparatus, and therefore does not patentably distinguish the

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claimed apparatus from the prior art. "Expressions relating the apparatus to contends thereof during an intend operation are of no significance in determining patentability of the apparatus claim" *Ex parte Thibault*, 164 USPQ 666,667 (Bd. App. 1969). Regarding claim 4, the screw comprises 3 thread starts. Regarding claim 5, the Lt/De ratio is between 2 and 10 (see col. 6, lines 4-9; col. 9, lines 27-39; and col. 14, lines 1-9). Regarding claim 15, a screw LT/De ratio of between 2 and 5 is disclosed (see col. 6, lines 4-9; col. 9, lines 27-39; and col. 14, lines 1-9). Regarding claim 8, Hunchar ('209) discloses an extruder comprising an extruding screw (14) and a barrel (18). said extruding screw being characterized by five (which anticipates the claimed range 2-6) thread starts. The Lt/De ratio is between 2 and 10 (see col. 6, lines 4-9; col. 9, lines 27-39; and col. 14, lines 1-9). An additional limitation "characterized by ... a pitch angle of between 28 and 45 degrees is recited". Hunchar ('209) describes the pitch of the screw in terms of ratio of pitch length to diameter rather than angle (see col. 7, lines 28-34 and col. 14, lines 1-11). It is stated that screw flights have "a pitch in the order of 1.6 times the diameters and in the preferred form in the range 0.4 to 2.4 times the diameters, particularly in the range 1.2 to 2 times the diameters, and in the most preferred form in the order of 1.5 to 1.7 times the diameters". It is evident from the col. 16 that "diameter" means diameter to the crest of the flight, as opposed to the rotor of the flight. Using applicant's definition of pitch angle defined on line 33 of page 3 of the instant specification and converting the slightly different definitions of "diameter" of applicant vs. Hunchar ('209) using the most highly preferred ratio of the two diameters of 1.04 disclosed in Hunchar ('209) col. 9 lines 27-38, the following conversion of the above

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quoted statement is obtained (angles round to 0.1 degrees): "a pitch in the order of [27.9 degrees] and in the preferred form in the range [7.5 to 38.5 degrees], particularly in the range [21.7 to 33.5 degrees], and in the most preferred form in the order of [26.4 to 29.4 degrees]". Therefore, claim 8 is rejected, in the alternative as being anticipated by and obvious over the reference as explained in MPEP2131.03. Claims 17-19, which recite different ranges of the same variables discussed above with regard to claim 8, are rejected in the alternative as being anticipated by and obvious over the reference as explained in MPEP2131.03. Regarding claim 9, cooling means (including 36) are disclosed. Regarding claim 10, it is considered that, cooling liquid is a material intended for use with the claimed apparatus, rather than a structural element of the apparatus, and therefore does not patentably distinguish the claimed apparatus from the prior art. "Expressions relating the apparatus to contends thereof during an intend operation are of no significance in determining patentabilty of the apparatus claim" *Ex parte Thibault*, 164 USPQ 666,667 (Bd. App. 1969). Regarding claim 11, the screw comprises 3 thread starts. Claims 6 and 16 recite ranges of H/wc. The variable H is discussed in col. 9, lines 27-39, where it is stated (or implied) that H is in the order of 0.04 times the radius of the screw, preferably 0.01 to 0.2 times, particularly 0.02 to 0.07 times, and the most preferred range is 0.03 to 0.05 times the radius of the screw. The examiner takes official notice that, in a five flight screw such as that disclosed by Huchar ('209), the center-of-crest to center-of-crest distance between adjacent flights, as taken along a helical line which is perpendicular to the flights, is $(\pi d \sin(\alpha))/5$, where d is the diameter of the screw and α is the pitch angle. For example, for $\alpha=28$ degrees, this value is

0.295d, for $\alpha=30$ degrees: 0.314d, for $\alpha=32$ degrees: 0.333d. So for the most highly preferred value of H of 0.04 times the radius (0.02d) at, for example, a pitch angle of 32 degrees, the H to crest-to-crest-distance ratio is $0.02/0.333 = 0.06$. WC can not be more than the crest-to-crest-distance, because crest width is necessarily positive or zero. Therefore, the H/wc range of claim 6 of "under 0.2" is anticipated. It is also considered the H/wc range of claim 16 is anticipated by or obvious over the reference, because it is state in col. 7 lines 37-39 that the crest width "is much smaller than the axial width of the channel". This statement, coupled with the recited values of H, shows that the claimed range of "H/wc is over 0.1" is overlapped.

13. Claims 1, 5, 7, 8, 12, 15, and 17-19 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rauwendaal (US 5,932,159). Regarding claim 1, Rauwendaal ('159) discloses an extruder (10) comprising an extruding screw (28) and barrel (18), said extruding screw being characterized by between 2 and 6 thread starts (see col. 8, lines 6-10). A pitch angle range of 30 to 90 degrees is disclosed (see col. 10, lines 58-67), which overlaps the claimed range. Therefore, claim 1 is rejected, in the alternative as being anticipated by and obvious over the reference as explained in MPEP2131.03. Regarding claims 5 and 15, an LT/De ratio of 1 to 20 is disclosed (see col. 10, lines 58-67), which overlaps the claimed ranges. Regarding claim 8, Rauwendaal ('159) discloses an extruder (10) comprising an extruding screw (28) and barrel (18). A pitch angle range of 30 to 90 degrees is disclosed (see col. 10, lines 58-67), which overlaps the claimed range. An LT/De ratio of 1 to 20 is disclosed (see col. 10, lines 58-67), which overlaps the claimed

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range. Therefore, claim 8 is rejected, in the alternative as being anticipated by and obvious over the reference as explained in MPEP2131.03. Likewise, claims 17-19, which recite different ranges of the same variables discussed above with regard to claim 8, are rejected in the alternative as being anticipated by and obvious over the reference as explained in MPEP2131.03. Regarding claims 7 and 12, the extruder is a single screw extruder (see col. 7, lines 22-26).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rauwendaal (US 4,798,473) is cited disclosing an extruder comprising a barrel and a screw, said screw having a pitch angle of 20-40 degrees (col. 5, lines 23-29). It is also stated that the invention "can be utilized in all extruder screws including multi-flighted extruder screws". Olson et al. (US 3,121,914) is cited as disclosing a multi-flighted extruder screw.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

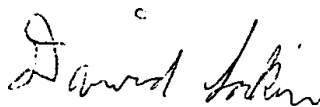
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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 703-308-1121. The examiner can normally be reached on 8:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



David Sorkin

January 17, 2002



**CHARLES E. COOLEY
PRIMARY EXAMINER**